IN THE CLAIMS

Please amend the claims as follows:

Claims 1-30 (Canceled).

Claim 31 (Previously Presented): A power-splitting infinitely variable transmission with two modes of operation, wherein constituent elements thereof are distributed between two power trains connecting an internal combustion engine in a parallel manner to wheels of a vehicle, including two epicyclic gearsets, two electric machines, one reducing stage, and adjusting means that distribute power between the two power trains differently depending on the mode of operation thereof, comprising:

a primary power train on which there is disposed a compound gearset including a first epicyclic gearset and a second epicyclic gearset;

a secondary power train provided with an epicyclic gearset associated with each electric machine of an electric variator; and

a mode-changing system configured to selectively immobilize at least one spinning element of one of the epicyclic gearsets associated with one of the electric machines, such that at least one mode of operation of the infinitely variable transmission is selected among a plurality of modes of operation, wherein

the internal combustion engine is connected via a reducing stage to a ring gear of the first epicyclic gearset and to a planet carrier of the second epicyclic gearset of a gearbox.

Claim 32 (Previously Presented): A transmission according to claim 31, wherein

the vehicle wheels are connected to the gearbox via a reducing stage of gear ratio K_0, one access of which is coupled respectively to a planet carrier of the first epicyclic gearset and to a ring gear of the second epicyclic gearset, and

the first and second epicyclic gearsets constitute a compound epicyclic gearset disposed on the primary power-splitting pathway.

Claim 33 (Previously Presented): A transmission according to claim 32, wherein

a first electric machine of the electric variator is connected to a reducing stage coupled to a sun gear of the first epicyclic gearset and to a ring gear of a third epicyclic gearset,

a sun gear of the third epicyclic gearset is coupled to a ring gear of a fourth epicyclic gearset,

the sun gear of the third epicyclic gearset and the ring gear of the fourth epicyclic gearset are connected to a frame via a first brake, and

a planet carrier of the third epicyclic gearset is coupled to the frame by a second brake.

Claim 34 (Previously Presented): A transmission according to claim 32, wherein a second electric machine of the electric variator is coupled via a reducing stage with gear ratio K_{e2} to a fourth epicyclic gearset by a sun gear of the fourth epicyclic gearset.

Claim 35 (Previously Presented): A transmission according to claim 31, wherein

the reducing stage is provided with a pinion engaged with a toothing mounted on a bearing that is free to rotate around a central gearbox shaft integral with the planet carrier of the second compound epicyclic gearset of the primary power train, and

a planet carrier of the first epicyclic gearset is integral with a ring gear of the second epicyclic gearset, the ring gear of the second epicyclic gearset being connected to or integral with the planet carrier.

Claim 36 (Previously Presented): A transmission according to claim 35, wherein the wheels of the vehicle are coupled on a shaft via a pinion to a toothing, integral with the ring gear of the second epicyclic gearset.

Claim 37 (Previously Presented): A transmission according to claim 35, wherein

the secondary power train is provided with third and fourth epicyclic gearsets respectively, for coupling the secondary power train to the variator, to the mode-changing system, and to the primary power train,

the third epicyclic gearset is provided with a sun gear, a ring gear, and a planet carrier integral with a second brake,

the fourth epicyclic gearset is provided with a planet carrier, which couples a sun gear of the fourth epicyclic gearset to a ring gear of the fourth epicyclic gearset,

the sun gear of the third epicyclic gearset is integral with the ring gear of the fourth epicyclic gearset, and the ring gear of the third epicyclic gearset is integral with the sun gear of the fourth epicyclic gearset,

the shaft of the gearbox terminates at an opposite end relative to the internal combustion engine by a pinion connected to a second electric machine, and

the sun gear of the second epicyclic gearset of the compound gearset carries an external toothing, which is coupled to a pinion integral with a shaft of a rotor of a first electric machine of the electric variator.

Claim 38 (Previously Presented): A transmission according to claim 37, wherein the sun gear of the third epicyclic gearset and the ring gear of the fourth epicyclic gearset are integral with a first lining of a brake, a second lining of the brake being integral with a

gearbox case and a brake actuator making it possible to activate or not activate braking by bringing the two linings together in response to an adjusting signal from a mode-of-operation controller of the transmission.

Claim 39 (Previously Presented): A transmission according to claim 37, wherein the planet carrier of the third epicyclic gearset, integral with the ring gear of the fourth epicyclic gearset, is integral with a first lining of a brake, a second lining of the brake being integral with a gearbox case, and a brake actuator, associated with a brake of the planet carrier, making it possible to activate or not activate braking thereof by bringing the two linings together in response to an adjusting signal from a mode-of-operation controller of the transmission.

Claim 40 (Previously Presented): A transmission according to claim 31, further comprising:

an operating controller including

a motive power unit controller of an operating point of a motive power unit as a function of predetermined stresses,

an engine controller of an operating point of the internal combustion engine configured to receive an operating point target value from the operating controller and configured to generate adjusting signals suitable for actuators for determination of the operating point of the internal combustion engine,

an electric machine operating controller of the two electric machines such that, for each machine, there is determined a mode of operation either as a motor or generator, a speed of rotation and/or a torque or else an armature voltage and/or an armature current, especially in relation with a device for management of an electrical

energy accumulator, the electric machine controller receiving a target value of the operating point from the operating controller and producing suitable adjusting signals for pilot-control circuits of the electric machines, and

a transmission-mode-changing controller, which determines an open or closed state of a first brake and/or of a second brake such that one mode among at least two modes of operation of the infinitely variable transmission is selected by an adjusting signal of the operating controller.

Claim 41 (Currently Amended): A power-splitting infinitely variable transmission with two modes of operation, wherein constituent elements thereof are distributed between two power trains connecting an internal combustion engine in a parallel manner to wheels of a vehicle, including two epicyclic gearsets, two electric machines, one reducing stage, and adjusting means that distribute power between the two power trains differently depending on the mode of operation thereof, comprising:

a third epicyclic gearset in series with one of the two epicyclic gearsets on one of the two power trains, the third epicyclic gearset cooperating with the adjusting means such that, in a first mode of the two modes of operation, a sun gear, a ring gear, and a planet carrier of the third gearset are spinning at the same speed, wherein,

on a first power train, the vehicle wheels are connected via the reducing stage to a planet carrier of a first epicyclic gearset, a sun gear of which is connected directly to a shaft of the internal combustion engine, and

a second power train is coupled to the first epicyclic gearset by the ring gear of the first epicyclic gearset.

Claim 42 (Canceled).

Claim 43 (Currently Amended): A transmission according to claim 41, wherein

the ring gear of the third epicyclic gearset is connected to a ring gear of a second epicyclic gearset, and

the sun gear of the third epicyclic gearset is integral both with [[a]] the ring gear of [[a]] the first epicyclic gearset and with a rotor of a first electric machine.

Claim 44 (Currently Amended): A transmission according to claim 43, wherein a planet carrier of the second epicyclic gearset is connected to the internal combustion engine via [[a]] the reducing stage, the reduction ratio of which can be matched to a mechanical power and to an optimal speed of rotation of the internal combustion engine to which the reducing stage is connected.

Claim 45 (Previously Presented): A transmission according to claim 44, wherein a sun gear of the second epicyclic gearset is connected to a rotor of a second electric machine.

Claim 46 (Previously Presented): A transmission according to claim 43, wherein, by activation of a mode-changing system, the planet carrier of the third epicyclic gearset is immobilized on a case via a brake disposed between the case and the planet carrier of the third epicyclic gearset.

Claim 47 (Previously Presented): A transmission according to claim 46, wherein the planet carrier of the third epicyclic gearset is connected to a sun gear of the third epicyclic gearset via a clutch adjusted by the mode-changing system.

Claim 48 (Currently Amended): A transmission according to claim 41, wherein

a second epicyclic gearset and the third epicyclic gearset are provided with a common ring gear, in that the planet carrier of the third epicyclic gearset spins freely around a shaft of the sun gear of the third epicyclic gearset, the shaft being connected to a shaft carrying the ring gear of the second epicyclic gearset, in that the planet carrier of the second epicyclic gearset spins freely around a shaft of a sun gear of the second epicyclic gearset, the shaft being connected to a shaft of a rotor of a second electric machine, and

[[a]] the planet carrier of the first epicyclic gearset spins freely around a shaft of the sun gear of the first epicyclic gearset, the shaft being integral at two ends with [[an]] the engine shaft of the internal combustion engine and with the sun gear.

Claim 49 (Previously Presented): A transmission according to claim 48, wherein a first electric machine is disposed outside of a common axis of the internal combustion engine, of the first, second, and third epicyclic gearsets, respectively, and of the second electric machine, a rotor shaft of the first electric machine being integral with a pinion engaged on an external toothing of a ring gear of the first epicyclic gearset.

Claim 50 (Previously Presented): A transmission according to claim 41, further comprising:

an operating controller including

a motive power unit controller of an operating point of a motive power unit as a function of predetermined stresses,

an engine controller of an operating point of the internal combustion engine configured to receive an operating point target value from the operating controller and

configured to generate adjusting signals suitable for actuators for determination of the operating point of the internal combustion engine,

an electric machine operating controller of the two electric machines such that, for each machine, there is determined a mode of operation either as a motor or generator, a speed of rotation and/or a torque or else an armature voltage and/or an armature current, especially in relation with a device for management of an electrical energy accumulator, the electric machine controller receiving a target value of the operating point from the operating controller and producing suitable adjusting signals for pilot-control circuits of the electric machines, and

a transmission-mode-changing controller, which determines an open or closed state of a clutch and/or of a brake such that one mode among at least two modes of operation of the infinitely variable transmission is selected by an adjusting signal of the operating controller.

Claim 51 (Previously Presented): A power-splitting infinitely variable transmission with two modes of operation, wherein constituent elements thereof are distributed between two power trains connecting an internal combustion engine in a parallel manner to wheels of a vehicle, including two epicyclic gearsets, two electric machines, one reducing stage, and adjusting means that distribute power between the two power trains differently depending on a mode of operation thereof, comprising:

a first compound gearset configured to connect the internal combustion engine to the vehicle wheels along a first power-splitting train;

a second compound gearset that, along with the first compound gearset, is configured to achieve power splitting via a second power-splitting train; and

a simple gearset configured to recombine the first and second power-steering trains, wherein

the first compound gearset, the second compound gearset, and the single gearset achieve a system for changing modes between at least two modes of operation of the infinitely variable transmission, and

the internal combustion engine is connected to a first epicyclic gearset of the first compound gearset.

Claim 52 (Previously Presented): A transmission according to claim 51, wherein

the first compound gearset is provided with the first epicyclic gearset to which the internal combustion engine is connected via a sun gear of the first epicyclic gearset,

a planet carrier of the first epicyclic gearset being connected to a reducing stage, the output of which is connected to driving wheels of the vehicle and to a planet carrier of a second epicyclic gearset of the first compound gearset,

ring gears of the first and second epicyclic gearsets respectively being connected together, and

common movement of the ring gears being transmitted at a coupling over the secondary power-splitting train.

Claim 53 (Previously Presented): A transmission according to claim 52, wherein

a sun gear of the second epicyclic gearset is connected to a planet carrier of the simple epicyclic gearset whose sun gear is connected to a rotary shaft of a second electric machine,

a first electric machine of an electric variator of the transmission is coupled via an output shaft of the first electric machine to a reducing stage connected both to the ring gears

of the first and second epicyclic gearsets of the first compound gearset, as well as to a ring gear of a first epicyclic gearset of second compound gearset, and

the second compound gearset includes a second epicyclic gearset and is configured in such a way that planet carriers and sun gears of the two epicyclic gearsets of the second compound gearset are coupled to one another in that the planet carriers of the second compound gearset are temporarily integral with a frame or chassis by means of a first brake, while a ring gear of the second epicyclic gearset of the second compound gearset can be made integral with the chassis or fixed point by means of a second brake, and in that the sun gears of the epicyclic gearsets of the second compound gearset are connected to a ring gear of the third epicyclic gearset.

Claim 54 (Previously Presented): A transmission according to claim 52, wherein

an output shaft of the internal combustion engine is aligned with a common shaft of rotation of the first compound gearset, of the compound mode-changing gearset, and of the simple gearset for recombination of the two splitting trains,

the internal combustion engine is directly connected without intermediate reducing stage via the output shaft to the sun gear of the first epicyclic gearset of the first compound gearset, the planet carrier of the first compound gearset being double and common to the two epicyclic gearsets of the first compound gearset, the planet carrier of the first compound gearset being spun on the sun gear of the first epicyclic gearset of the first compound gearset, fixed at an end of the output shaft of the internal combustion engine, spinning on the sun gear of the second epicyclic gearset of the first compound gearset, and fixed on a first part of the common shaft,

a second part of the common shaft is aligned with the output shaft and carries the planet carrier of the simple gearset,

the common shaft can rotate freely on two bearings and carries

the ring gear, common to the two epicyclic gearsets of the first compound gearset, and the ring gear of the first epicyclic gearset of the second compound gearset, and

a sun gear of the second compound gearset, which is integral with a ring gear of the simple gearset.

Claim 55 (Previously Presented): A transmission according to claim 54, wherein

the ring gear of the two epicyclic gearsets of the first compound gearset is provided with a single toothing to drive a single pinion of the sun gear mounted on the planet carrier, each planet gear of the planet carrier being double, meaning that the planet carrier carries

a first pinion engaged between the sun gear of the first epicyclic gearset and the single internal toothing of the ring gear, common to the two epicyclic gearsets, and

a second pinion integral with the first pinion via their common spindle and engaged on the sun gear of the second epicyclic gearset of the first compound gearset, and

the planet carrier of the first compound gearset is mounted to rotate freely on a suitable bearing disposed on the output shaft of the internal combustion engine and is integral with a toothed gear engaged on a pinion integral with the vehicle wheels.

Claim 56 (Previously Presented): A transmission according to claim 55, wherein the ring gear of the first compound gearset also carries an external toothing, which is engaged with a pinion mounted at an end of a shaft of a rotor of a first electric machine of an electric variator.

Claim 57 (Previously Presented): A transmission according to claim 56, wherein the sun gear common to the two epicyclic gearsets of the second compound gearset is provided with a single external toothing to drive a single pinion of the planet gear mounted on the planet carrier of the second compound gearset, each planet gear of the planet carrier being double, meaning that the planet carrier carries

a first pinion engaged on the sun gear and on an internal toothing of the ring gear of the first epicyclic gearset of the second compound gearset integral with the common ring gear of the first compound gearset, and

a second pinion, integral with the first pinion via their common spindle and engaged on an internal toothing of the ring gear of the second epicyclic gearset of the second compound gearset, and

the planet carrier of the second compound gearset is mounted to rotate freely between the sun gear and the ring gear of its first epicyclic gearset of the second compound gearset.

Claim 58 (Previously Presented): A transmission according to claim 57, wherein a shaft carries the planet carrier of the simple gearset, which spins on the sun gear, whose shaft, aligned with the shaft of the planet gear, is connected to a rotor of a second electric machine.

Claim 59 (Previously Presented): A transmission according to claim 58, wherein the mode-changing system includes

a first brake provided with a first lining integral with the ring gear of the second epicyclic gearset of the second compound gearset and a second lining integral with a case of a gearbox, a brake actuator being disposed between the two linings in

such a way that, in response to an adjusting signal from a transmission-mode-changing controller, the first brake is either opened or clamped, and

a second brake provided with a first lining integral with the planet carrier of the second compound gearset and a second lining integral with the case of the gearbox, a brake actuator being disposed between the two linings in such a way that, in response to the adjusting signal from the transmission-mode-changing controller, the second brake is either opened or clamped.

Claim 60 (Previously Presented): A transmission according to claim 51, further comprising:

an operating controller connected by a bus to different sensors of a state of operation of the vehicle as well as to sensors for detecting an intent of an operator and to a plurality of controllers, including

a motive power unit controller of an operating point of a motive power unit as a function of predetermined stresses,

an engine controller of an operating point of the internal combustion engine configured to receive an operating point target value from the operating controller and configured to generate adjusting signals suitable for actuators for determination of the operating point of the internal combustion engine,

an electric machine operating controller of the two electric machines in such a way that, for each machine, there is determined a mode of operation either as a motor or generator, a speed of rotation and/or a torque or else an armature voltage and/or an armature current, especially in relation with a device for management of an electrical energy accumulator, the electric machine controller receiving a target value of the operating point from the operating controller and producing suitable adjusting signals

for pilot-control circuits of the electric machines in order to determine their respective operating points according to a four-quadrant current-voltage rule l, and

a transmission-mode-changing controller, which determines an open or closed state of a first brake and/or of a second brake in such a way that one mode among at least three modes of operation of the infinitely variable transmission is selected by an adjusting signal of the operating controller, among which

in a first mode of operation, the first brake or the second brake blocks the planet carrier of the two epicyclic gearsets of the second compound gearset, the ring gear of the second epicyclic gearset spins freely, and the second compound gearset functions as a simple gearset composed of the ring gear of first epicyclic gearset, of the common planet carrier, and of the common sun gear,

in a second mode of operation, the mode-changing system is disposed in such a way that the two brakes are both clamped, all elements of the second compound gearset being blocked in such a way that the two electric machines are directly connected to the primary power-splitting train, and either one or the other or both of the electric machines can operate both as a generator and as a motor, and

in a third mode of operation, the first brake is open and the second brake is clamped, in such a way that the ring gear of the second epicyclic gearset of the second compound gearset is braked and functions as a support point.